



National Transportation Safety Board Washington, D.C. 20594

Railroad Accident Brief

Accident No.: DCA-04-FR-004
Location: San Antonio, Texas
Date of Accident: December 7, 2003
Time: 12:12 a.m. central standard time¹
Railroad: Union Pacific Railroad
Accident Type: Railroad switching foreman struck by locomotives
Fatalities: 1
Injuries: 0
Damages: \$0

Synopsis

On December 7, 2003, about 12:12 a.m., a Union Pacific Railroad (UP) switching foreman was struck and killed by two locomotives at the UP's East Yard in San Antonio, Texas. The two locomotives were operated as a single unit under the foreman's control. He was operating the locomotives from the ground using a remote control transmitter. The foreman usually had a helper. However, on the night the accident occurred, the helper position was not filled because of a crew dispatch problem, so the foreman worked alone.

His assignment was to switch² 44 railroad cars using the locomotives. When the accident occurred, the locomotives were traveling about 11 mph and were moving back over the track they had just traversed rather than over the tracks leading to the destination (train yard track 3).

The Accident

The switching foreman reported for duty on December 6, 2003, at the west³ end of East Yard for the regular third shift, which was from 11:00 p.m. to 7:00 a.m. The third-shift foreman was assigned to switch the 44 cars on train yard track 3 using two locomotives, UP 709 and UP 337, which were stationary on track 32. (See figure 1.) For this type of work, the third-shift foreman typically would have had a helper; however, on this night, a helper was not available

¹ All times in this brief are central standard time.

² *Switch* means to move cars to other tracks based on their destinations.

³ The UP designates east and west as the timetable directions on the Del Rio Subdivision. West is toward Del Rio. Timetable direction may vary from actual compass direction. Unless otherwise noted, directions in this report refer to timetable direction.

because of a crew dispatch problem. The foreman was instructed to take control of the two locomotives and the two associated remote control transmitters from a second-shift crew. The foreman used one remote control transmitter. The other remote control transmitter was later found in a locker.

After determining that a helper would not be available to assist the foreman, the yardmaster instructed the foreman to work alone. The yardmaster told investigators that he had informed the foreman that he would be allowed to go home after he finished switching the 44 cars.⁴ The yardmaster reported that the foreman did not object to working alone.

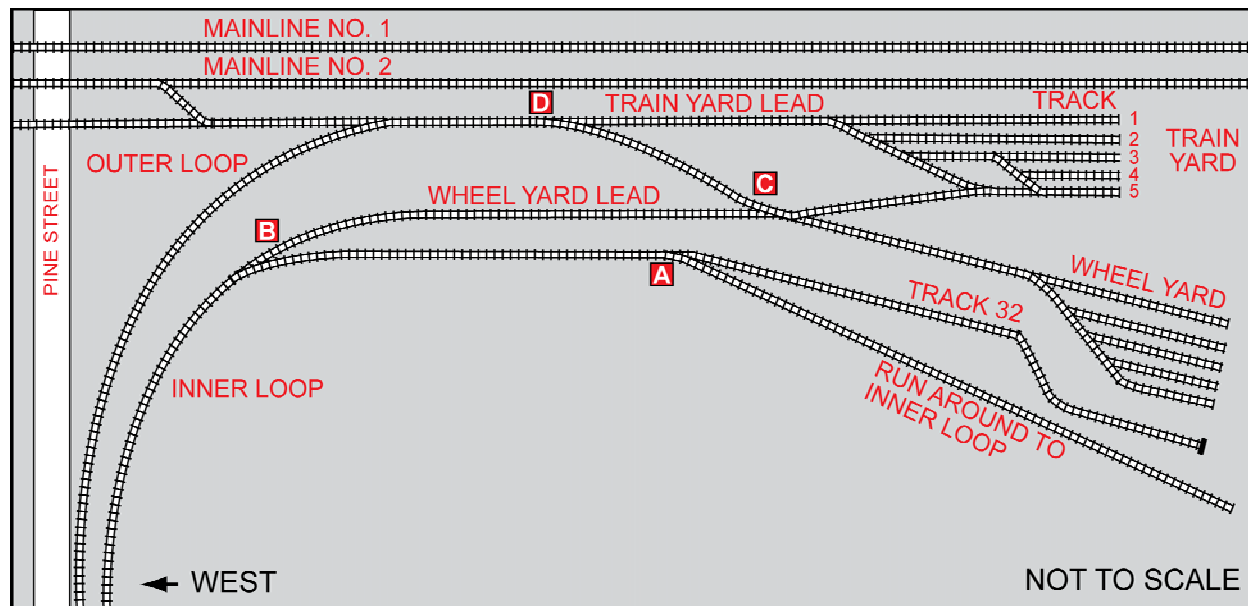


Figure 1. Track layout of west end of East Yard. (Letters A, B, C, and D indicate switches.)

While the third-shift foreman was reporting for duty, a two-person switching crew from the second shift (3:30 p.m. to 11:30 p.m.) was working overtime because of a personnel shortage. This crew was assigned to switch cars on train yard track 4. The crew was to use the train yard lead track before the third-shift foreman used the track.⁵ Just after midnight, the third-shift foreman radioed the second-shift crew and asked whether space was available so that he could move the two locomotives to train yard track 3. The crew gave an affirmative reply. A second-shift crewmember said that shortly thereafter he heard the accident locomotives moving and a radio-controlled switch activate; however, he did not see the locomotives move.

The third-shift foreman planned to move the locomotives from track 32 to train yard track 3. The route he planned to use from track 32 to the train yard lead involved a trailing movement

⁴ When interviewed, the yardmaster estimated that switching the 44 cars on track 3 would have taken the foreman between 2 and 3 hours.

⁵ Only one crew could use the lead track at a time, and the overtime crewmembers had less than 4 hours to work before they exceeded 12 hours of service, the Federal maximum limit. The yardmaster estimated that the second-shift crew would have required about 1 1/2 hours to complete its work.

through the first switch (labeled A in figures 1, 2, and 3) and four relatively short back-and-forth movements across three other switches (labeled B, C, and D in figures 1, 2, and 3).

The event recorder data indicate that the locomotives responded to a remote control transmitter command, moved westward about 12:09 a.m. through switches A and B, and then stopped. Next, switch B was aligned by a radio control command, the locomotives were moved eastward back through switches B and C, and then the locomotives stopped. The locomotives were then moved westward back over the same track toward switch B, instead of moving over the intended track and switch D. About 12:12 a.m., a stop command from the remote control transmitter was recorded about the time the third-shift foreman was struck. The locomotives were found later standing on the wheel yard lead track with the west end of the leading locomotive about 237 feet from the switch points of the last switch traversed, switch C. (See figure 2.)

The wheel yard lead to the train yard lead east crossover switch (C) was found aligned toward the inner loop. For the locomotives to reach the train yard lead and the train yard track 3, switch C should have been aligned in the other direction.



Figure 2. Exemplar locomotives are shown near postaccident point-of-rest location. (Letters A, B, C, and D indicate switches.)

Postaccident Events

About 12:30 a.m., the second-shift crew requested and received authorization from the yardmaster to inspect a remote control zone⁶ in preparation for its activation. The crew moved its two locomotives westward on the train yard lead to perform a track inspection on the outer loop track, which is known as zone 2. The crewmembers said that they noticed the stationary locomotives on the wheel yard lead. The yardmaster said that after the track inspection was completed and zone 2 was activated about 12:37 a.m., he became concerned because the locomotives were still on the wheel yard lead.

After several failed attempts to contact the third-shift foreman on the radio and the intercom system, the yardmaster contacted the manager of yard operations. The yardmaster and the manager of yard operations started to investigate. After they checked the crew building and the surrounding area, they located the foreman under the locomotives and called emergency services.

Investigation

The investigation of this accident included inspecting and testing the locomotives, the remote control transmitter, and the remote control receiver. All were functioning normally. During the investigation, the walking surfaces and lighting conditions were generally good. The weather was clear at the time of the accident.

Foreman's Actions

Several applicable UP operating and safety rules were in effect at the time of the accident. No witnesses were available to verify whether the foreman complied with the following rules:

- General Code of Operating Rules (GCOR) Rule 1.20, *Alert to Train Movement*: This rule requires employees to be alert to train movements and to expect movements at any time, in any direction, on any track.
- GCOR Rule 8.2, *Position of Switches*: This rule requires employees aligning a switch to observe switch points and ensure they are in the correct position for the movement.
- UP Safety Rule 81.1.1, *Walking On or Near Tracks*: This rule reiterates the content of GCOR Rule 1.20 regarding alertness to movements. In addition, it cautions employees to keep a careful lookout in both directions and not to rely on hearing the approach of on-rail equipment.

⁶ A *remote control zone* is a designated section of track where remote control locomotives may operate without a person observing the track ahead once the zone is activated. Before the zone's activation, the track must be inspected.

- UP Safety Rule 81.2.1, *Step Over Rail*: This rule requires employees to step over (as opposed to stepping on) rails and to walk straight across tracks (at right angles) when possible.
- UP Safety Rule 81.2.2, *Sufficient Distance*: This rule requires employees to maintain a safe distance from moving equipment, to cross tracks at right angles whenever possible, and not to foul tracks close in front of moving equipment.

The locomotive event recorder data showed that the foreman initiated his last movement after the locomotives cleared the east crossover switch (switch C). The location of the disturbed ballast indicated that the locomotives struck the foreman about 122 feet west of the switch points, where the westward crossover track diverged from the wheel yard lead. This ballast site was located on a straight line between the pushbutton control boxes of the east (C) and west (D) switches.

If the foreman had walked in a straight line between the two switches, his back would have been toward the approaching locomotives. Even with the sound of the engines, he might have had difficulty determining the track on which the locomotives were moving because of the shallow angle between the two tracks.

Foreman's Fitness for Duty

Postaccident toxicological testing was conducted on the foreman for drugs and alcohol. The test results were positive for tetrahydrocannabinol carboxylic acid (THC-COOH), the inactive metabolite of marijuana (5.5 nanograms per milliliter) in blood. Tetrahydrocannabinol (THC), the active substance in marijuana, was not detected in the specimen at or above the Federal Railroad Administration (FRA) cutoff limit of 1 nanogram per milliliter. The lack of THC at the specified cutoff suggested that at least 3 hours had passed since he had used marijuana. Still, the long elimination half-life of THC-COOH may have resulted in the observed value of that substance even if he had used marijuana up to a week before the accident.⁷

If the foreman had used marijuana as early as the day before the accident, then some aspects of his performance might have been affected. Studies⁸ demonstrate that driving-related skills can be impaired up to 3 hours after using marijuana. Studies⁹ also have shown that an operator's performance of a very complex task can be impaired for as long as 24 hours after he has smoked marijuana. (An example of a very complex task, one involving human-machine interaction, is landing an airplane.)

⁷ (1) M.A. Huestis, J.E. Henningfield, and E.J. Cone, "Blood cannabinoids. II. Models for the prediction of time of marijuana exposure from plasma concentrations of delta 9-tetrahydrocannabinol (THC) and 11-nor-9-carboxy - delta 9-tetrahydrocannabinol (THCCOOH)J," *Journal of Analytical Toxicology*, 1992 Sep-Oct;16(5):283-90. (2) R.C. Baselt, *Disposition of Toxic Drugs and Chemicals in Man* (5th Ed.) (Foster City, CA: Chemical Toxicology Institute, 2000).

⁸ R.C. Baselt, *Drug Effects on Psychomotor Performance* (Foster City, CA: Biomedical Publications, 2001).

⁹ V.O. Leirer, J.A. Yesavage, and D.G. Morrow, "Marijuana, Aging, and Task Difficulty Effects on Pilot Performance," *Aviation Space Environmental Medicine*, Vol. 60 (1989):1145-1152.

The exact time that the foreman last used marijuana cannot be determined from the toxicological information, because the window of use, between 3 hours and 1 week before the accident, is too broad. Therefore, the Safety Board cannot determine whether the effects of marijuana impaired the foreman's performance at the time of the accident. On the day of the accident, his coworkers reported, they did not see any signs that he was impaired, and they felt he was fit for duty.

Installation of Power-Assisted Switch Machine

The switch involved in this accident was 1 of 10 power-assisted switch machines installed about 2 1/2 years before the accident. The original plan was to configure the switches for operation by a radio control, a remote panel, or a pushbutton adjacent to the switch. During the switch machines' installation, this implementation plan was not completed. The switches could be operated only by a pushbutton that was located at each machine. In addition, there was no formal or documented commissioning (turnover) procedure.¹⁰ (The purpose of a formal commissioning or turnover procedure for new equipment is to verify that the installation procedures were correctly followed and to keep a record of the functional tests that demonstrate that the equipment is safe and ready for service.) The local signal maintenance manager described the transition from installation to operation as an "informal process." After the installation of the power-assisted switch machines at East Yard, the UP did not issue written operating instructions to the switchmen and other employees.

Before the accident, 4 of the 10 switch boxes at the west end of East Yard were wired so that the electrical disconnect switch did not cut off the electrical power from the switch machine. The defect was discovered only after the machines were placed in service. The defect created a safety hazard for the personnel servicing the switches, because they need to disconnect the electricity to prevent injury. The defect was discovered and corrected before the accident. The defect also created a safety hazard for mechanical crews working on, under, or between rail cars or locomotives. These crews need to know with certainty that locking out the electrical disconnect lever will remove power from the switch and prevent equipment from moving into their work area. The UP's list of cardinal safety rules has both blue signal¹¹ and "lock-out/tag-out" procedures. Cardinal safety rules are described as those "that, if violated, could potentially result in severe personal injuries."

A second defect was discovered during the postaccident inspection. This defect involved 10-gauge multistrand wire that was inserted into the terminal blocks of all 10 power-assisted switch machines at the west end of East Yard. The manufacturer's specification requires 14-gauge solid wire, which is smaller than 10-gauge wire and has different clamping and conducting properties. The improper wire was used during the original switch installation. A few days after the accident, the UP signal manager for San Antonio was asked why a 10-gauge wire had been used. He responded that it was a heavier wire and said, "That is better." In a subsequent

¹⁰ Had this switch been on a signaled mainline track, it would have been subject to the FRA-required commissioning (turnover) procedure.

¹¹ A *blue signal* is a light, flag, or sign put on a piece of equipment or on a track indicating that people are working on, under, or between rail cars or locomotives.

interview, when asked again about the UP policy on wire size, he indicated that the policy was to use the specified wire size. When the wire size is not specified, he said, “We go to the manufacturer’s specification and use the wire size the manufacturer recommends.”

The signal manager stated that based on his postaccident inspection of the switch he believed that the 10-gauge wire caused the loss of power because the spring was not holding this size wire correctly in the terminal block. He told Safety Board investigators that when he made this discovery he re-stripped the wire and “plugged” the incorrectly sized wire into the terminal block. Then he tested the switch and approved it for use. Later, after other managers reported problems, the entire switch machine was removed and replaced with another machine that had the correct size wire. This sequence of events indicates that the official UP policy on using the manufacturer-recommended wire size was not well understood by the UP managers and employees.

UP representatives reported that some of the failures observed during postaccident testing of the switch by UP employees may have been the result of the repeated cycling of the machine and an overloaded protective “thermal cut out” feature. However, no indication was found that the machine was cycled repeatedly during the actual accident sequence, and the machine was not cycled repeatedly during normal switching operations.

The manufacturer advised the Safety Board that an incorrectly sized wire often results in intermittent electrical contact. An intermittent electrical contact poses safety concerns because it may result in the machine pump running without the switch points moving. Because of its intermittent effect, an incorrectly sized wire is often difficult to discover. All of the switchmen interviewed by the Safety Board stated that during normal operations they sometimes heard motor noise without the switch points moving.

Operation of Power-Assisted Switch Machine

The power-assisted switch machine moved the switch points when a button on an adjacent post was pressed. With each activation, the single pushbutton control was supposed to cycle the switch between the normal and the reverse positions. Several visual and auditory cues provided an indication that the switch either was changing position or had changed position. The switch had a red metal target on top of the switch stand that rotated 90° when the switch points moved to a new position. When aligned in the normal position, the target was parallel to the track. When aligned in the reverse position, the target was at a right angle to the track.

The switch also was equipped with three switch point indicator lights—green, yellow, red—on top of its housing. The meaning of each of these indicator lights was explained in GCOR Rule 8.10. When the switch points were aligned in the normal position, a green light was illuminated. When the switch points were aligned in the reverse position, a yellow light was illuminated. When either switch point was in transition to a new position or improperly aligned, a red light was illuminated. During transition, the electric motor and the hydraulic pump made noises. In addition, a noise was made as the spring tension moved the switch points to the new position.

The most important indicator of the switch position was the actual position of the switch points against the stock rail. GCOR Rule 8.2 emphasized visual confirmation of switch point position: “Employees ... must make sure the points fit properly and the target, if so equipped, corresponds with the switch’s position.”

Investigators observed that the switchmen at East Yard often would manually disconnect the electrical power to a power-assisted switch machine once the switch points moved to the desired position. Interviews revealed that this informal practice had emerged in response to a perceived unreliability of the power-assisted switch machines and to a concern that a nonoperator-initiated switch position auto-reversal¹² could occur.

Obstruction tests indicated that this type of switch was designed to auto-reverse in about 8 seconds once an obstruction was detected. In the informal procedure developed to avoid auto-reversals, a switchman disconnected the electrical power to the switch machine once the points had moved to the desired position. Testing showed that disconnecting the power after the points had moved and before the machine had completed its cycle resulted in the machine not running through a complete cycle on the next activation. The adoption of the power removal procedure by the switchmen at East Yard increased the probability that the pump would run, but the switch points would not move, on the next cycle. All of the interviewed switchmen stated that they had observed unwanted auto-reversals and heard motor noise without switch point movement at East Yard.

After the accident, the east crossover switch (C) was found aligned in the normal position, or toward the wheel yard lead and the accident site. Before the impact, the last movement of the locomotives was westward over switch C. For the locomotives to reach the yard track, this switch should have been in its reverse position, or toward the crossover.

Testing and examining the switch machinery by FRA and railroad personnel immediately after the accident revealed that an improper wire might have caused intermittent electrical power interruptions to the motor. Testing of the switch also revealed that a power interruption that occurred after the switch points moved but before the hydraulic ram fully retracted would prevent the switch points from moving during the next button activation, even though the motor, hydraulic pump, and ram action sounded similar to the points moving. These noises could have provided a false audible indicator that the switch had begun its movement cycle.

The most likely sequence of events that led to the east crossover switch not being in the proper position at the time of the accident is as follows: a power interruption occurred during the previous cycle, caused either by the improperly sized wire or by manual disconnection of the power on a previous cycle; when the foreman pushed the button, the ram retracted, and the corresponding motor noise was made. Because the foreman was told that he could go home after he completed this task, he had an incentive to expedite his movements and get the locomotives onto track 3 before the second-shift crew’s task physically blocked the movement of the

¹² Microswitches inside the machine were designed to determine whether the switch points were in the proper position. Should an obstruction be detected, the switch machine piston would attempt to position the switch points; if the attempt was unsuccessful, the piston would retract, and the machine would then conduct a second cycle of operations, which would reposition the switch points to their original position.

locomotives. Despite the UP procedure that required a visual confirmation of switch point and target position, he likely did not wait at the switch machine to confirm visually that the points had moved to the correct position, but instead he relied on the audible motor and pump noise as indications that the points had moved. (See figure 3.)

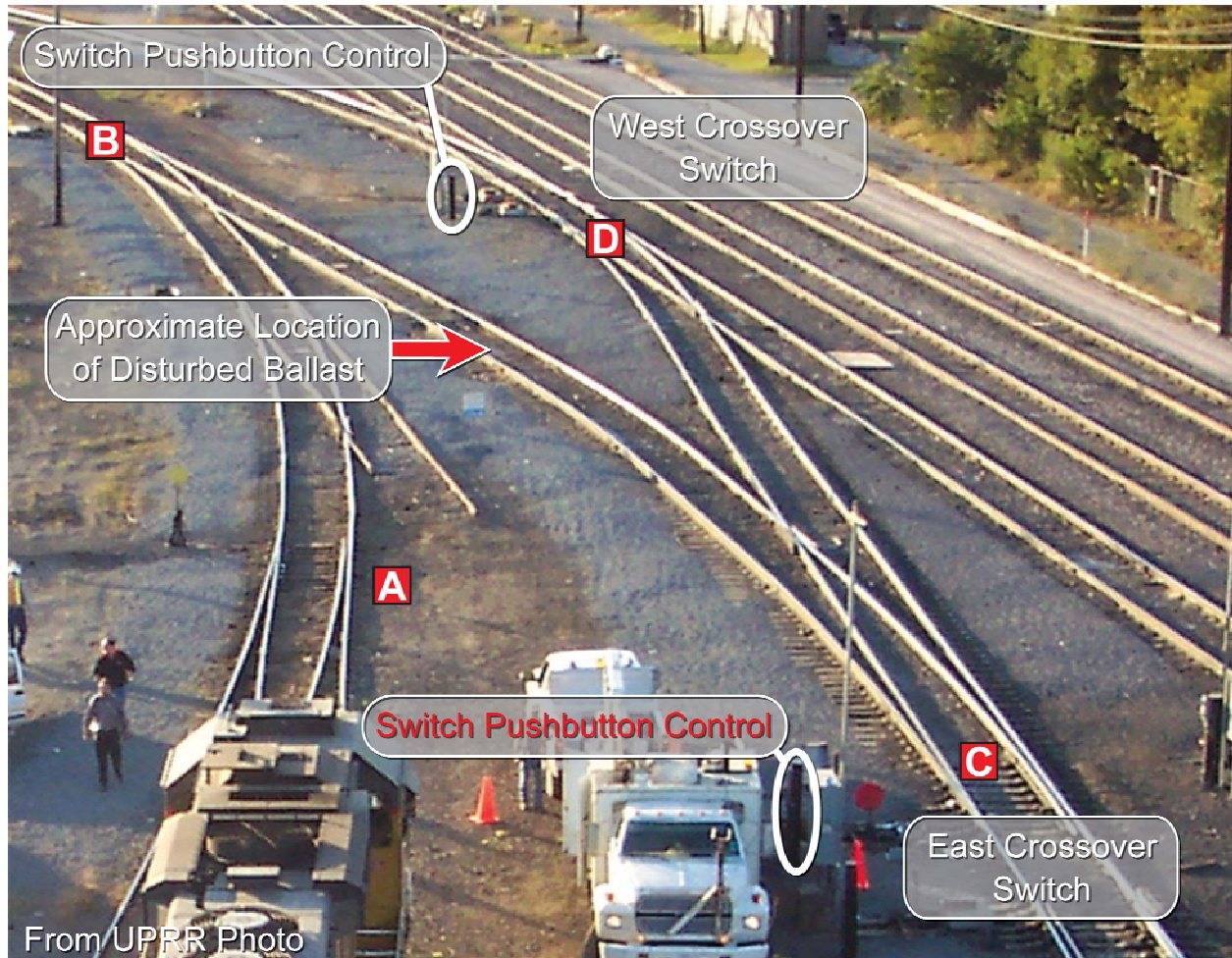


Figure 3. Location of switches, pushbutton controls, and disturbed ballast. (Letters A, B, C, and D indicate switches.)

UP Power-Assisted Switch Machine Maintenance

Federal regulations require railroads to inspect and maintain records about switches on signaled tracks; however, the regulations do not require railroads to inspect and maintain records about switches on nonsignaled tracks, such as railroad yards. The UP is not required by Federal regulations either to establish a regular inspection cycle for or to keep maintenance records on yard power-assisted switch machines. The UP manager in charge of maintenance told the Safety Board that the switch machines were inspected once a month, or more frequently in the case of trouble calls, but these inspections were not documented. The Safety Board notes that the lack of regulations does not prevent establishing a regular maintenance cycle and maintaining inspection records. Without maintenance records, it is difficult to know which monthly inspections are

being conducted and whether a particular piece of equipment or class of equipment has safety defects.

All of the switchmen interviewed indicated that yard power-assisted switch problems occurred occasionally. These problems included auto-reverse or a motor running without a switch point movement. The night yardmaster said that he received “a lot” of reports of such switch problems. He passed the reports either to the trouble desk in Omaha or to local maintenance personnel. He indicated that he had received only one such problem report during his 3 months at East Yard. The manager of train operations, who oversees several yards, said that he had received no reports. The signal manager said that he recalled some trouble calls on the yard power-assisted switches related to obstructions, but these calls were no more frequent than trouble calls for other yard switches.

The UP did not keep records of trouble calls on yard power-assisted switches. Had the UP kept records of trouble calls, a more accurate and complete picture of the safety defects and problems of the power-assisted switch machines might have emerged and been addressed. Since this accident, the UP has advised the Safety Board that it maintains records of the trouble calls on yard power-assisted switches in San Antonio.

Single Person Operations

The switch foreman was working alone at the time of the accident. No railroad policy or Federal regulation prevents a yardmaster from assigning a switch foreman to work alone. Railroad operating and safety rules apply equally to either an individual or a crew. During a two-person crew operation, one person may control the movement of cars or locomotives and may not be visible to the other person. Had the switching task been assigned to a two-person crew, the crew might have organized the work differently and avoided the need for one person to walk from the east crossover switch (C) to the west crossover switch (D). However, railroad operations are necessarily flexible, and a two-person crew easily could have replicated the conditions of this accident. One crewmember might have been tasked with moving the locomotives over the same route, while the other crewmember walked eastward on track 3 to perform the other duties.

Adequacy of UP Rules Compliance Programs

FRA regulations (49 *Code of Federal Regulations* Part 217.9) require each railroad to have a program of operational tests, inspections, and record-keeping to “determine the extent of compliance with its code of operating rules, timetables, and timetable special instructions.” The UP complies with this requirement through a field training exercise (FTX) program that is designed to “ensure rule compliance and safe operating practices.”¹³ The FTX program’s objectives include eliminating human error accidents and ensuring rules compliance and safe operating practices.

¹³ UP *Field Training Exercise and Managers’ Supplement* effective January 2003.

The FTXs involve local managers and supervisors monitoring the “employees’ knowledge, application, and compliance with railroad rules, regulations and instructions” with a focus on “those that are SAFETY SENSITIVE.” The exercises are either observations of routine work or structured situations in which a manager sets up a scenario involving a red signal, a red flag, or a stop signal requiring a movement to stop short. Managers record the FTX results as either “pass” or “fail.”

Safety Board investigators reviewed 10 months of San Antonio Service Unit FTXs for switching activities. The exercises related to five operating and five safety rules. The review indicated that 875 FTX observations or structured simulations were conducted before the accident; of those, only 9 (about 1 percent) were recorded as failures.

Observations by FRA inspectors at two San Antonio yards (East Yard and Kirby) found a much higher exception rate. Between April 4 and October 15, 2003, 119 observations were recorded. Exceptions were noted in 32 (about 27 percent) of the observations. Of the 119 observations, 18 were specific to switching safety practices. Exceptions were noted in 17 of the 18 (about 94 percent) FRA observations. Among the procedures subject to these tests and observations were three of the practices directly related to this accident: employee alertness to train movement, observing the position of switches, and walking on or near the tracks.

A report of FTX testing on UP remote control rules for the same period on the San Antonio service unit indicated that 640 tests were conducted with only 8 (or just over 1 percent) listed as failures. By contrast, UP corporate officials based in Omaha, Nebraska, conducted a field audit of remote control locomotive operations around the time of the accident and recorded 7 failures during 44 tests (about 16 percent). These figures suggest that the FTXs conducted by division-level UP officials were not as effective as others at finding, and potentially correcting, the same level of noncompliance.

The Safety Board notes that since the accident the UP has made a number of changes aimed at improving the safety of remote control locomotive switching operations. These changes include increasing the frequency of remote control locomotive crew FTX testing; moving the yard manager’s office so that more direct supervision of switching operations can be provided; increasing the number of managers designated as supervisors of remote control operations; establishing a lead designated supervisor of remote control operations to oversee the program on the service unit; increasing the frequency of corporate oversight safety audits; and requiring remote control operators to be in a better position to determine the direction of train movements.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the December 7, 2003, yard accident in San Antonio, Texas, was the foreman’s inattentiveness to the location of the locomotives and the switch position and the lack of adequate oversight by the Union Pacific Railroad of power-assisted switch installation, maintenance, and operations at its East Yard.

Recommendations

As a result of its investigation of this accident, the National Transportation Safety Board makes the following safety recommendations:

To the Federal Railroad Administration:

Require railroads to implement for all power-assisted switch machines, regardless of location, a formal commissioning procedure and a formal maintenance program that includes records of inspections, tests, maintenance, and repairs. (R-06-7)

To the Union Pacific Railroad:

Issue written guidance that emphasizes the importance of using specified wire requirements to the employees responsible for installing and maintaining power-assisted switch machines. (R-06-8)

Issue written guidance that emphasizes the proper use of the equipment to employees who use power-assisted switch machines. Include any unique operating characteristics, such as auto-reverse, the potential undesired results of midcycle power interruption, and “lock-out” procedures, and require employees to demonstrate an understanding of the guidance. (R-06-9)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

Mark V. Rosenker
Acting Chairman

Ellen Engleman Conners
Member

Deborah A. P. Hersman
Member

Kathryn O’Leary Higgins
Member

Adopted: May 23, 2006

Deborah A. P. Hersman, Member, filed the following concurring statement on May 15, 2006.

Notation 7780

Member Hersman, concurring:

I agree with the probable cause as stated in this report, and I support the three recommendations made to FRA and to UP. However, I would have liked the report to more fully explore the safety of remote control operations, in particular with respect to remote control operators (RCOs) working alone.

In the lead-up to this accident, the RCO, who was to have had a partner working with him for the switching operations assigned to the third shift, was instructed to work alone when the partner did not arrive for work. The crew from the second shift was already working overtime to make up for a personnel shortage. The report states that nothing in FRA regulations or in the UP's operating rules prohibits one-man remote control switching operations.

Contributing to this accident was a crossover switch that was not in the proper position due to a power interruption in the previous cycle, caused either by the installation of an improperly sized wire or by the manual disconnection of the power on the previous cycle. Another contributing factor was the RCO's apparent violation of several railroad operating rules designed to help keep him safe during yard switching operations. It may be for these reasons that staff stopped short of analyzing the safety of one-man remote control switching operations when issuing this report.

The report states that a two-person crew would not necessarily have prevented this accident, depending on how a two-person crew would have organized the work assignment. One cannot argue with that conclusion; a 10-person crew may not have avoided this accident if the work assignment was not organized properly with safety at the forefront. However, the work assignment was supposed to be completed by a two-person crew, and it is unknown from this report what knowledge the RCO had or what guidance he received to conduct the work assignment by himself in the safest possible way. Furthermore, the report does not approach the question whether this accident would have happened if the switching operation was being done conventionally, with at least one crew member operating the locomotive from inside the cab.

In a report to Congress issued April 11, 2006, FRA acknowledged that remote control operations lend themselves to "task overload, and resultant loss of situational awareness or errors, due to increase in tasks and responsibilities that come with remote control locomotive (RCL) operations" The report further discusses the risk that remote control operations may promote "channelized attention," when a worker trying to manage a large number of tasks focuses only on one or a few tasks while ignoring all the others, a phenomenon that can lead to a loss of situational awareness. FRA's report further discusses the importance of proper training because "inadequacies in RCO training and

preparation have the potential to be problematic and may lead to RCO errors, as well as accidents/ incidents due to a lack of knowledge or understanding of RCL operations, including switching operations.” FRA stated to Congress that it is now preparing a Notice of Proposed Rulemaking to clarify requirements for railroad operating rules governing safety of conventional and remote control operations. The FRA report did not discuss the issue of one- or two-person RCL operations in the switching environment doing work that would have traditionally been done by two-person crews.

Because FRA seems to be taking action to further safeguard remote control operations, it may have been be superfluous for the Safety Board to issue recommendations to FRA in this regard. However, I believe the Safety Board has missed an opportunity with this first report on a fatal RCL accident to discuss the differences between traditional operations and RCL operations and any safety concerns or safety benefits that may exist. Further, we should have used this report to articulate our support of FRA’s effort or provided comments about areas of interest stemming from our investigation. The report was silent with respect to encouraging the railroads to find better ways to properly train RCOs, particularly if they are working alone, and thus ensure that remote control operations are conducted as safely as possible.